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ABSTRACT

A method to effectively organize new courses of instruction or reorganize existing courses of instruction is readily adaptable to most subject areas and can be developed with limited funding. The four modes of the multi-mode course are large group assemblies, small group discussion sessions, self-instructional learning laboratories, and individual projects. (RH)

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THE DESIGN OF PERSONALIZED MULTI-MODE COURSES IN HIGHER EDUCATION

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THE DESIGN OF MULTI-MODE COURSES IN HIGHER EDUCATION

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In an effort to improve the quality of instruction, coupled with the demands for accountability, university and college decision-makers will be carefully analyzing existing types and formats of instruction.

This paper describes a method to effectively organize new courses of instruction or reorganize existing courses of instruction. The model is readily adaptable to most subject areas and can be developed with limited funding. This system is designed to effectively handle small or large enrollments while retaining the humanistic qualities of a one-to-one instructor-student relationship.

Postlethwait (8-20) describes the two most important components of a good educational system as: 1) a well-structured sequence of learning events and, 2) a pleasant personal relationship between instructors and students. One method of attaining these objectives is through the use of a properly organized multi-mode instructional system.

The Multi-Mode Instructional System

The multi-mode instructional system which will be described in this paper consists of four elements, the first being Large Group Assemblies, where background information is given; Small Group Discussion sessions, where testing, response to questions, reinforcement of learning experiences, and personal attention is given to the student; laboratory experiences, where students can learn at their own rates, and on a schedule convenient to them; and finally, individual projects, which enable the student to work in an area of interest on a personal basis.

The following description will break down the multi-mode instructional system into its component parts and describe the rationale and function of each.

Component One: Large Group Assemblies

The Large Group Assembly (LGA) is, as the name implies, a large group of students meeting in a lecture hall situation. The LGA is effective for certain types of learning activities, such as introducing course procedures and assignments, viewing films, conducting panel discussions or debates, and presenting mediated demonstrations. Basically, the LGA has the same organization as any large lecture section, but in this case, it represents only one segment of the entire course. A senior instructor usually conducts the LGA's. He introduces material essential to the week's study, introduces and follows up guest lecturers, or presents demonstrations.

The LGA is an economical way to present certain types of information, but is not an effective method for coping with individual differences in learning styles or learning rates.

Component Two: Small Group Discussion Sessions

One of the most important characteristics of the multi-mode instructional system is the weekly Small Group Discussion, (SGD). This learning activity is designed to reinforce information presented in the LGA and in the self-instructional laboratory. It also provides the humanization, or one-to-one interaction with an

instructor which makes learning most comfortable and rewarding to the student. The SGD also serves as the environment wherein weekly quizzes are given and where students are provided with the opportunity to ask questions or to raise topics related to the course.

The SGD usually consists of three to seven students and a discussion leader. Fewer than 3 students tends to limit discussion, while groups larger than 7 persons tend to become impersonal and defeat one of the intended purposes of the discussion session.

The length of the SGD depends on the requirements of the particular course of instruction to which it is applied. However, the instructor should try to keep the SGD as short as possible, while still allowing adequate time to accomplish effectively the purposes of the SGD. Thirty-five to forty-five minutes seems to be an appropriate length.

Discussion in the SGD is sometimes hindered the first time the group meets, due to the students' unfamiliarity with the instructional system and with each other. This situation usually improves quickly, as students and instructor become better acquainted (1-34). The SGD leader should be oriented toward discovering any problems the students might have in assimilating course material or fulfilling individual projects, and he should be able to offer supplementary information and suggestions. The SGD provides the direct instructor-student contact which is absent in typical large group instructional settings.

In the testing portion of the SGD, two testing methodologies are generally employed. The first is a written quiz designed to test the student's mastery of the week's unit of study. The second method consists of some type of oral questioning covering the same or related material. The oral questioning allows the student to express an answer in his own terms, and because of peer pressure, it tends to insure better preparation.

Another rationale for the oral questioning is the premise that "you really learn a subject when you have to teach it." (8-14) In response to a properly worded question, the student will be giving, in essence, a mini-lecture, telling the group all he knows about a given subject.

The experience of the authors and others suggests that the SGD is most effective when each student is graded on his performance, and that students seem to operate better under a certain amount of pressure. Each student should be told immediately the number of points earned in each SGD session. This immediate feedback serves as reinforcement to the well-prepared, and provides notification of potential problems to the ill-prepared.

Component Three: Self-Instructional Learning Laboratories

An independent learning experience can be provided in a self-instructional laboratory. In a lab situation of this type, students are allowed to progress through weekly learning activities on their own, with a minimum of assistance. Learning activities are presented, using such self-instructional materials as audio tapes, filmstrips, slide programs, video tapes, motion pictures, and individualized instruction packages, which take a student through the necessary steps in attaining a skill or mastering a concept.

Students are free to use the lab whenever it is convenient to their schedule; they can work at their own pace, and they have access to the lab instructor, who can give individual attention without interfering with the progress of other students (1-43). Work missed or not mastered can be made up or reviewed in preparation for an examination, all at the student's convenience.

Depending upon the particular application, a student would not be required to perform activities in the lab for which he could demonstrate mastery. If a student felt he possessed a competency in any area of lab work, he would be invited and encouraged to take a quiz and demonstrate his proficiency, thereby permitting him to concentrate on areas where he had not yet attained mastery.

The teaching methodologies used in the learning labs may be conducted in many ways. Ron Jamison, a mathematics professor, handles the learning labs in one of his courses through the use of videotape lectures, which are available at a number of locations. Each tape covers a weekly unit of material, and may be viewed by the student as often as he wishes (7-2). Postlethwait (9-74), in his introductory botany course, uses a combination of audio tapes, 8mm motion film, informational handouts, and laboratory experiments, which aid the student in acquiring the information necessary for mastery of the course material.

Curl (5-36), Duane (6-2) and others, in the media field, utilize slide programs with narration printed directly on the slides. The advantage of having narration on the slide is that the student can go back and review a concept or advance the program without having to coordinate the program with other devices such as a tape recorder, or find his place if narration is supplied on a handout. An effective variation of the slide program is the same concept in booklet form. A written text is accompanied by visual materials which demonstrate the skills or concepts taught. Bullough (4-37) employs this system and incorporates similar information on large charts for both individual and small group use.

Component Four: Individual Projects

Certain valuable learning experiences cannot be accomplished within the learning sessions already mentioned, and may be experienced by the studen through supplemental assignments. Among these are knowledge gained in the completion of an independent project or a research paper on an area of the course which is best le rned through investigation and actual assembly of a finished product.

Because an individual project is a valuable instructional tool, it cannot be an assignment which is only mentioned once. It should be introduced in the lecture session, and supplemented in the SGD and self-instructional lab, to best aid the student in attaining the correct information, and gaining the most valuable experience from his project. Postlethwait, Duane and others provide handouts to guide students in their individual projects, at the same time allowing them as much freedom in the choice of topic and research methods as is possible.

It is the authors' contention that students develop higher quality individual projects if they are required to turn in a tentative copy in advance of the due date, for evaluation with the instructor. This gives the student the opportunity to correct possible weaknesses in his project before turning in a final copy.

Staff Requirements: The Senior Instructor

The senior instructor has the overall responsibility for the course. He organizes and directs the planning of course content, procedures, timing of tests, and the supervision of lab instructors and SGD leaders. The senior instructor is directly in charge of the large group assembly, and selects or prepares all instructional materials used in the course. If prepared materials of good quality are available, he must select the most appropriate for his course. If none are available or suitable, he must personally design and/or supervise the design and production of instructional materials to meet his needs. He is also responsible for the development of test questions, planning and making available materials for student project, and detailing the schedule for the course.

The senior instructor also must determine a method for compensating the the lab instructors and SGD leaders for their work. There are several ways in which this can be accomplished. One method is to assign graduate assistants to the course; another is to compensate assistants on an hourly basis; a third method is to give course credit in upper division or graduate hours to the lab assistants. Aside from financial or course credit, other benefits are available, such as the opportunity to associate informally with a faculty member, to gain recognition from an academic department, and to have ample opportunity to reinforce skills acquired in undergraduate and graduate training.

Staff Requirements: The Small Group Discussion Leaders and Laboratory Instructors

The SGD session can be ably led by students qualified in the subject area. Lab instructors and SGD leaders can either be graduate students or advanced upper-division students, depending on the needs and complexity of the course material. The SGD leader assumes the role of discussion leader, and represents the senior instructor in the various discussion groups. He also administers the weekly quizzes, records student progress, and responds to questions on the current study unit, as well as answering any questions the students may have from previous study assignments or individual projects. One of the main purposes of utilizing students as SGD leaders is to supply the type of personal contact between students and staff members that seems to provide for more humanized and effective teaching and learning. This type of personal contact provided in the multi-mode instructional system is almost impossible to achieve in a traditional large group situation. The use of students as instructors would markedly increase the instructional manpower pool, and in turn, lower the ratio of students to instructors (3-4).

The lab instructors also administer any practical exams given in conjunction with laboratory work, and make minor repairs and adjustments to the audiovisual equipment used in the lab, plus note any problems inherent in the lab exercises and programs, reporting them to the senior instructor.

Utilizing student talents in this way seems to have several distinct advantages. First, it replaces impersonal instruction with personalized attention. Second, it raises the general level of academic excellence of all students completing the course. Third, it gives the "student instructor" experience in using the skills which he has acquired; finally, by eliminating some of the more menial teaching duties, the senior instructor is free to devote more time to the improvment of course materials and course procedures (2-10).

Evaluating the System

A final step in the development of a multi-mode instructional system is the evaluation system. There are as many ways of assessing student progress as there

are methods of presenting subject matter. The method used by most instructors who use the multi-mode instructional system is based on a point system, and uses the approach that all students achieving a specified level of mastery shall receive a corresponding grade. Using behavioral objectives and assigning points to the various course projects and quizzes, the instructor weights them according to the importance he places on them. The student knows where the emphasis of the course is placed, and how well he must perform to attain a specific grade.

Some instructors feel uncomfortable with this system, because the number of failures is generally small. However, it is assumed that the real reason we teach courses is to help our students achieve mastery. For example, if 70% of the students in a course of study achieved the desired objectives as determined by the instructor, and demonstrated competencies by successfully completing assignments and examinations, they should receive grades equivalent to their mastery of the course material. The remaining students should receive grades according to the level of the competency they achieved.

If the purpose of the exam is to provide the instructor with information as to how many students mastered each skill or concept representing an objective of the course, then every significant skill or concept should be assessed (2-25).

Evaluation in a multi-mode instructional system is based on the premise that instruction will be broken down into weekly units, and that the students will be tested on each one of these units. There are two major advantages in using small units of study and more frequent exams. For the instructor, it is possible for him to sample the level of mastery of the important skills and concepts as the course progresses. If he finds he isn't reaching his students in a certain area, he has time to ake necessary changes during the course. For the student, it is possible to dentify areas in which he is deficient before they accumulate to any appreciable extent (2-24). Also, it encourages the student to keep up because of the weekly pressure of a quiz.

Some instructors provide alternative forms of the quizzes, in order to give the student the opportunity to reach an acceptable level of performance. There are several ways of organizing this approach. One way is to let the student make the choice. He may decide he didn't do as well as he would have liked, and so request an opportunity to take an alternative form of the quiz, with the highest of the two scores being recorded for grading purposes (6-2).

Another method is to require mastery before a student can progress to the next unit, giving the student three or four opportunities (in the form of alternative quizzes) to attain this goal.

A third method uses three alternative quizzes. For example, if, following a quiz, the student is not satisfied with his performance, he can request to challenge the quiz and try to better his standing. If, after the second quiz, the student is still not satisfied, he may request a third quiz covering the same material. In order to encourage students to take advantage of these repeat opportunities, the final score would be computed as shown below:

If two quizzes were taken, the score would be computed as follows:

$$\frac{(1st) + 2(2nd)}{3}$$

If three quizzes were taken, the score would be computed as follows:

$$\frac{(1st) + 2(2nd) + 4(3rd)}{7}$$

In this method, all the grades would be counted, but the second quiz would be weighted more than the first, and the third more than the second, to provide incentive in making up quizzes (7-5).

Conclusion

In summary, student course evaluations demonstrate the effectiveness of the multi-mode instructional system in restoring the humanistic approach to education that has been lost in many of our college and university courses. Multi-mode courses are generally highly regarded: the small group discussion sessions and learning laboratories, where the students receive individual attention, are especially well liked. The opportunity for a student to get to know an instructor on a one-to-one basis and for the student to be well known by an instructor all result in the humanism sought after and desperately needed in higher education.

Students in multi-mode courses have a high mastery rate because the possibility of review of course material is built into the system. The various learning modes help take individual differences in learning style into account and allow the learner to proceed at his own rate. Learning objectives, frequent testing and immediate feedback can help provide the accountability sought after in higher education.

The writers feel the multi-mode instructional system is a partial response to the many challenges to higher education in the seventies.

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